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AUTHOR Mack, Herschel; Littlejohn, Stephen
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ABSTRACT

This paper describes a field study of the "Personalized System of Instruction" (PSI) as it was used in an undergraduate communications research course. On the basis of statistics from two years of the program's implementation and from student responses after completing the course, the study draws five conclusions. (1) Most students did not make optimal progress in passing the sequential unit mastery tests. (2) Most students found that they had difficulty in understanding or remembering course material, even in the self-paced format. (3) The PSI approach produced a lower grade distribution than did the traditional lecture-discussion method. (4) Many of the students were not satisfied with the PSI approach and considered that no significant learning had taken place. (5) Although some students seemed to learn well and were satisfied with the PSI method, the instructors could not tell if it was the method that helped or if these were merely good students. The paper concludes that PSI has many advantages as an instructional method but must be carefully adapted to fit the needs of particular teaching situations or course objectives. (RL)

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PSI as an Approach to the Teaching of Empirical Research Methods

For Presentation

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Herschel Mack

Stephen Littlejohn

Humboldt State University

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PSI AS AN APPROACH TO THE TEACHING OF EMPIRICAL RESEARCH METHODS

Several years ago we were presented with an interesting teaching problem. We developed a course in empirical research methods for undergraduates. This course came to be a requirement in the Journalism major and an elective in the Speech Communication program. For a variety of reasons discussed below, we felt that traditional teaching methods were not sufficient for this course. We therefore decided to use a self-paced, competency based approach known as Personalized System of Instruction, or PSI.

We have used this method for over two years, and while we believe it has a number of advantages, certain problems have also become apparent. In this paper we will describe PSI, indicate how we used it in our course, and present an evaluation. The paper is divided into four sections: general introduction, survey of literature, field test, and evaluation.

MODULE I--A General Introduction to PSI

The Personalized System of Instruction (earlier known as the Keller Plan, now more often identified simply as PSI) was developed by a psychologist named Fred S. Keller. After

retiring from a long career of teaching at Columbia University, Keller became involved in the creation of a new psychology department at the New University of Brasilia in 1963-64. In this somewhat unique situation in South America, Professor Keller developed a behavioral approach to instruction which has gained many adherents since its introduction around a dozen years or so ago.

What is PSI? Answers to this question can be gained from several sources. Keller himself identified five critical features of his plan for personalizing instruction (Keller, 1968):

> 1. Work at your own pace--this means that the student moves through the course at a speed determined primarily by his/her abilities and time demands.
>
> 2. Master a Unit Before You Move Ahead--this means that the student may move ahead (to new material) only after demonstrating mastery in the material with which he/she is now involved.
>
> 3. Lectures are for Motivating, Not Supplying Critical Information--this means that the instructor may no longer use the lecture as the primary source of information for his/her students. It implies that other information sources must be developed to supplant the type of material which was formerly transmitted through lecture.
>
> 4. Written Work is Crucial in Teacher-Student Communication about the Class--this means mastery of concepts must be demonstrated through student response in writing. Two implications of this feature of PSI are that (1) the instructor uses student written response as a guide to determining areas where individual students need more work, and (2) the function of writing for the student is somewhat altered--where previously a student responded to indicate his level of proficiency, now a student must respond to indicate his mastery of concepts.

> 5. Proctors are Essential-- this means that someone must serve the function of testing, immediately scoring, providing feedback, and ultimately tutoring the student. Student proctors are desirable if possible.

Keller's original plan has undergone a number of revisions and modifications to make it applicable to more instructional situations. An excellent review of these modifications (as well as a description of the original plan) may be found in several sources (Cook, 1974; Walbesser, 1971). In a recent article of Communication Education, Scott and Young (1976) discuss the implementation of PSI in speech communication classrooms. In particular, these authors note the reinforcement theory principles involved in PSI. They conclude their article by commenting:

> While PSI isn't for everyone, it seems to be well suited to at least some of the instructional needs of communication teachers and the students enrolled in their courses. In fact, if for no other reason, PSI appears to be well suited to communication instruction because it puts into practice many of the principles that we contend are essential to human understanding. (p. 221)

We have not used Keller's original plan without some modification. For example, in our particular teaching situation, we have used a written/oral combination for evaluating our students. We have not had any lectures in our course (only a single mass-orientation session). As instructors of the course, we became the proctors (we do not disagree with Keller's reasoning concerning the advantages of using student proctors--we simply did not find that a feasible

system for our course).

There are some philosophical reasons why PSI may be an instructional approach worth considering. As noted in an article by Buterbaugh and Fuller, PSI creates a situation where the teacher and the student must necessarily share the responsibility for learning (Buterbaugh, 1975). To the extent that the student really does share in the learning process, this makes him/her more involved. A number of years ago Mortenson suggested that ego involvement was a neglected variable in persuasion research. Perhaps it is just as true today that <u>involvement</u> is a neglected variable in student learning research. When the student discovers that he/she has become involved with the learning process, this will likely change his/her patterns of response to instruction (hopefully in desirable ways). In situations where the current pattern of instruction has not led to the most desirable set of student responses, PSI thus at least allows an alternative mode of instruction.

It seems likely that when a student learns that he/she can not move ahead until he/she masters a set of material, then he/she will be motivated to do something about it. This is in contrast to the traditional lecture format, where the material keeps coming, whether or not the student has mastered the concepts of a previously presented set of materials. Thus, in PSI, positive reinforcement is given to students who keep moving ahead--it is not given to a student who is not making progress.

Learning takes place in smaller chunks in PSI than it does in traditional learning situations. Because this is so, (1) there is less reason for the student to depend on rote memory for the learning of concepts, and (2) there is a corresponding increase in learning related specifically to situations in which the learned material is (later) to be used. Module exams can easily be designed which test mastery of concepts and their application in specific situations. With larger chunks of learned material, this is also theoretically possible of course. But in the process of learning more material, rote memorization may be difficult enough--this often precludes the application level of learning. When students are required to demonstrate their mastery of concepts (through the exam at the end of each module of material), they have a real incentive to rise to the application level of learning.

In most forms of PSI, some very high level of concept learning is required--90% (or in our case, 100%) before the student progresses to the next set of material to be learned. Because of the necessity of demonstrating through mastery before progression, the student must change his attitude concerning what learning means. A student cannot decide before beginning a course "I will only do the minimum to get by." The "minimum" and the "maximum" approximate each other for each unit of learning. Thus for a student to "get by", his level of learning must more nearly approach the desirable

end of the continuum than in a traditional situation.

In PSI, if ten modules are the content for a course, a student who completes all ten at a mastery level will receive an A in the course, someone who completes only nine will receive a B, etc. Given the same amount of material covered under regular instruction, there is no guarantee (or contract) to the student concerning what grade he/she will receive in the course. By setting his own goal (in terms of the number of modules to be completed during the quarter), a student self-selects his own grade for the course (of course, some students may set unreasonable goals for themselves). Thus it is typically students' decisions, not the instructor's, which determine how grades will be distributed in a course. While some researchers on PSI report that approximately 50% of the grades in such courses end up being A's, we have discovered that it is not true in certain types of classes. But in any case, given a reasonable set of material to be covered, students can make their own decision concerning how much to do in the course and at what rate to progress. For the philosophical reasons noted above, we feel that PSI is an alternative worth considering for any instructor who is not fully satisfied with the instructional model which he/she is utilizing in a particular course. However, it is not a panacea, and must be carefully adapted to individual needs.

MODULE II--Literature on the Effectiveness of PSI and Individualization

We can see that PSI has great intuitive appeal. Unfortunately, however, research results on differences between individualized approaches and traditional methods are mixed. One of the biggest reviews of literature in this area is that of Hirsch (1976), who surveyed thirty-three studies of the learning effectiveness of individual vs. group approaches to the teaching of high school mathematics. In addition, he surveyed 19 studies of attitudinal differences. The large preponderance of studies in both areas report no significant differences, and of the few which reported significance, the results are rather split in direction.

However, a critical glance at Hirsch's survey will reveal a number of problems. First, all of the studies dealt with mathematics instruction and all were on the secondary level. A key weakness is that most of these studies dealt only with gross norms. Few investigated individual differences, rates of learning, or long term retention. In addition, most of these studies used nonequivalent control groups, suggesting the possibility that results may have been confounded.

The few studies reporting individual differences reveal that some students gain more from personalized instruction than do others. For example, Nix (1970) found that while

gross norms did not differ significantly, several kinds of students excelled under the individualized approach. These students included those with average mathematics ability, those with less than average I.Q.'s, and boys. Malcolm (1973) reported that the seventh, eighth and ninth graders who excelled under individualized instruction had more creative learning styles than those who did not do as well.

Another problem with Hirsch's survey of literature is that the studies dealt with a number of different formats for individualized instruction. It is hard to tell which of these formats would be superior. A recent study of PSI in college mathematics was conducted by Harris and Liguori (1974). They found no significant difference between the PSI approach and traditional lecture in learning gains or or attitude toward the course. While their study was nicely controlled, the authors pointed out that the lecture groups were small and received much the same treatment as the PSI group. We suspect, and the authors admit, that experimental variation may not have been maximized in this study.

Of course, studies have been done in other content areas as well. Studies reporting positive results in learning from individualization were noted by Heun, Heun, and Ratcliff (1976). These studies dealt with such courses as engineering (Kulik and Kulik, 1975), physics (Moore, Hauck, and Gange, 1973),

systems (Roth, 1973) and psychology (Morris and Kimbrell, 1972; Corey, Valente, and Shannow, 1971). A number of favorable findings were reported by Brook (see Cook, 1974) in his survey of 120 studies on PSI. Of special note is the repeated finding that long term retention effects are significantly greater in PSI than in other methods. Many of the studies surveyed by Brook indicated a positive difference in attitude toward PSI.

Recently, Brooks and Leth (1976) reported a study of individualized instruction in a basic communication course. One hundred twenty freshmen were randomly assigned to sections which used an individualized, module method. Fifty were assigned to two control groups which used traditional methods. The method used in the experimental sections was very much like that described earlier in the paper. It also strongly resembled the format of our field test reported below. Thus, this study is of particular interest. While students in both groups showed significant gains in learning, the experimental group achieved significantly better on the post test than did the control group. It was further found that student evaluations of the personalized format were generally positive. The authors' conclusions are reflected in the following quotation:

> Why did the students in the module sections achieve better than those in the control sections? Several reasons are plausible. First and foremost, the emphasis of the course was focused on a student's learning rather than on the teacher's telling.

> Second, a principle which has been demonstrated to be effective in learning is repetition. The modules utilize this principle to the fullest...
>
> Third, programmed learning in and of itself may help to explain the significant gains in achievement of those students in the module sections...
>
> Another factor to be considered in explaining the positive results of this study may be student involvement in the learning process beyond that of reading the text or listening to a lecture ..
>
> Finally, it should be remembered that this was, to a certain extent, an individualized approach. Learning is personal. Students differ in their rate of learning, their ability, and their desire to learn. (p 201)

On the basis of research, we cannot assume that PSI and other individualized approaches are necessarily superior to traditional methods. There are probably numerous intervening variables which must be considered (see, for example, Civikly, 1976). Instructors considering such an approach should think about cost, student needs, and program needs. In addition, the instructor must realize that, like any teaching tool, PSI must be carefully utilized and effectively presented, or it will not succeed.

MODULE III--Using PSI in the Teaching of Empirical Research: A Field Test

In the last few years, we have been faced with an interesting teaching situation, which has demanded a fresh approach to teaching. In this module, we would like to share our experience in developing and evaluating a self-paced

approach to the teaching of an undergraduate course in empirical research methods.

The course, entitled Empirical Research in Communication, was designed several years ago as an elective for Speech Communication majors at Humboldt State University. Soon after its inception, the Journalism Department adopted the course as a requirement for its majors. Since then, the course has been cross-listed in both departments. Thus far, it has been taught by us in the Speech Communication Department, although the majority of students are Journalism majors. The course has three broad instructional objectives:

1. To increase the students' interest in quantitative literature and research design.

2. To sensitize the student to the importance of quantitative study.

3. To increase the students' ability to understand the content and language used in empirical research reports.

This course provides a unique opportunity for students interested in communication to develop an understanding of a gamut of empirical research methods as well as an appreciation for the role of quantitative research in the communication field. An additional benefit for the journalist is that he/she will develop certain critical skills necessary in reporting results of empirical research, which reporters occasionally encounter. We have both come to value this course,

but we have also experienced certain serious teaching difficulties.

The nature of the material and the level of the students creates some real blocks to learning. First, student reaction reveals that it is a difficult course. It involves a great deal of technical information, almost all of which is new to the average student. Students grasp this material at different rates, making the standard lecture format less than adequate as a teaching method. Another disadvantage of the lecture format for such material is that the material requires such precision and detail of explanation that many students tend to lose interest. Both of us have sensed the "forest and trees" problem here.

A second instructional problem is that students enter the course with widely varying ability (and attitudes toward their ability) in relation to the mathematical tasks which are required in the course. A third instructional problem relates to the two academic areas from which students are drawn for the course. The fields of Journalism and Speech Communication have somewhat differing orientations toward empirical research. Therefore, the students in the class are divided as to the perceived and actual needs which they have for the content of the course. A final problem in the instruction for this course is that the material must be carefully arranged in hierarchical fashion so that skills

and concepts are built upon one another logically. This need exists in any subject matter, of course, but we believe it is especially important with this kind of technical material.

Both of us taught the course using the traditional lecture format, and we were not successful in overcoming these problems. As a result, we sought and received a small grant to individualize instruction. Now the course is completely self-paced. It is designed around behavioral objectives, which are hierarchically arranged in modules. The course also includes one-to-one tutorial assistance and various media materials. Before describing the course in detail, we will review the basic process we went through to develop this approach.

First we had to get information about self-pacing and behavioralized instruction. We attended an on-campus workshop, read materials related to individualized instruction, and talked with colleagues in other departments who have successfully used self-pacing. We reviewed various media and computer materials and sought the advice of a media specialist. We also reviewed a number of materials used by other departments. Generally, our course follows the format outlined in a very useful text, Constructing Instruction Based on Behavioral Objectives, by Walbesser (1971).

We began the process by listing the major topics of the course and specifying what competencies relate to these topics. These rough competencies were then grouped into trial module areas. The initial modules were further placed in a logical

sequence. After some refinement of module areas, we translated the rough competencies into behavioral objectives. This preliminary procedure resulted in a skeleton outline of the course.

Over a period of several weeks, we wrote our draft materials related to the objectives of each module. As you would suspect, it was necessary to re-organize and re-work some of the objectives at this time. Three Journalism majors, taking the course as an independent study, were used to pilot test the materials. They worked through the drafts and completed the module examinations in the same fashion as anticipated for the finished course We met weekly with these students to discuss the material and receive feedback on the student's perspective. Several adjustments were made at this time. Final typing and printing were completed in time for the beginning of Spring Quarter. Now let's take a closer look at the course as designed.

As mentioned earlier, the syllabus is organized around a set of nine ordered modules. Seven of these modules are defined as the "core"--these first seven modules must be completed sequentially by the student to receive a C grade in the course. These seven basic modules are ordered as follows:

1--The Science of Communication

2--Research Design

3--Measurement

4--Understanding Communication Tests & Questionnaires

5--Statistics

6--Computations

7--Review: Design, Measurement, and Statistics

Completion of Module 8 (Evaluating Research) earns the student a B grade in the course; Completion of Module 9 (Applications) earns the student an A in the course.

Within the design of each basic module, the same organizational pattern is always followed. First, the student is presented with the behavioral objectives to be achieved in that module. For example, in the 5th module (Statistics), one of the behavioral objectives is stated as follows:

> After completing this module, you will be able to...correctly identify types of error (Type 1 or 2) associated with certain statistical results provided by the instructor.

Second, a Rationale is presented for reading the particular module. The rationale usually involves a short paragraph which emphasizes the importance of learning the information contained in the particular module. Third, an Outline of the material covered in each module is presented to guide the student in his/her reading. Fourth, the bulk of the module consists of activities, which includes essentially reading interspersed with review questions, exercises to be completed as the student reads, and some viewing of media materials. Fifth, near the end of each module (or occasionally at the beginning after the outline), new terms introduced in that module are listed. These were added at the suggestion of one of our pilot students who felt that this could be a helpful summary which a reader could review to see if he or she had learned the material. Sixth, each module in the syllabus

ends with a self-assessment. Each self-assessment is structured in exactly the same way that the exam for that module is structured. If a student can pass the self-assessment with no difficulty, he or she should feel ready to take the exam for that module. If he or she has some difficulty, then further reading and/or tutorial help is warranted. When a student has completed the reading of a module in the syllabus (including the self-assessment), he or she may show up to take the exam for the module (a student need show up in class only when he or she wants to take a module exam or get tutorial help during 2 two-hour blocks weekly).

A student progresses from module to module by passing examinations. Passing is defined as "100% with flexibility". What that means is that we expect the student to complete all questions on a module exam correctly.

However, if a student can orally explain an ambiguous response in a way which indicates understanding, the instructor may count the item as correct. Three forms of each module exam have the same format as the self-assessment and conform exactly to behavioral objectives. Each exam is short. Most may be completed in 5 to 10 minutes--an exception is the computation module which requires 30 to 45 minutes; that module exam is also the only one which may be taken "open book".

There are some rules concerning the completion of module exams. With the exception of the final week of class, a

student may not repeat a module exam which is not passed in the same period. However, if a student passes one module exam, he may take the exam for the next module in the same period. There is no penalty for not passing a module exam. A student may keep taking module exams until he or she passes the module. In fact, we had to write up to 5 forms for different students on two of the modules. Passing on the third try is as acceptable as a pass on the first try.

The same time block that is available for students to take module exams is also used for student tutorial with an instructor. On any given day, several students may be taking module exams and others may be receiving tutorial help. At times the pace is hectic; at other times quite slow (we noticed a real dip in attendance when midterm exam time occurred in other courses the students were taking).

What problems have been encountered in our first two times teaching an empirical research course with a self-paced method? There are some obvious cost factors which should be mentioned. Preparing and organizing a course in the self-paced method is time consuming (two quarters were barely sufficient). In terms of workload, two faculty members have been involved working fulltime for one-half credit. Anyone trying this approach is likely to pay in time or money or both.

In a team situation, there is of course the need for considerable time for interaction and compromise. We spent

a number of hours in talking, reading each other's drafts, etc. Clarity between instructors must exist. We were fairly fortunate in that respect (except for one module exam where each instructor keyed the correct answer differently for one question).

During rush hours, we both felt that we had either too many students (around 35 were enrolled) or too little time for contact hours. One serious concern was that a number of students procrastinated in this method--some of them pulled it out in the end, but a few others did not. We tried to avoid this problem by calling in students for a "lack of progress conference," but some students did not even show up for that.

An important aspect of using the self-paced approach for the first few times in a course like this was doing an empirical evaluation of what happened in the class. Here are some of the things we found out.

MODULE IV--Evaluation of Field Test

Tables 1-7, which are appended to this report, may be of interest. These include the following sets of data:

Cumulative module pass rate by week, 1976 and 1977

Module pass rate, 1976 and 1977

Final grade distributions

Frequency distribution of student questionnaire responses

Tables 1 and 2 include the cumulative pass rate for each of the modules by week. The course was planned so that a student could get through all nine modules in a quarter by passing a module a week. It is clear from the pass rate that most students did not progress at this optimal rate. In the 1977 course, only 18% of the students had completed the final (seventh) core module by the seventh week. 28% did not pass the seventh module until the tenth and final week of the quarter. Still, a few students maintained an optimal pace. 6% passed Module 8 by the eighth week, and the same number passed Module 9 by the ninth week.

The data in Tables 3 and 4 reflect the pass rate for each module. The overall pass rate in 1976 was 59%; in 1977 it was 50%. This means that in 1977 students took each exam twice, on the average. There was, however, large variability among students, and as the tables show, the modules varied greatly in difficulty.

Tables 5 and 6 reflect the final distributions under PSI in 1976 and 1977 and under the traditional lecture-discussion format in 1975, 1974, and 1973. Here we see that the grade point averages were lower under PSI than the traditional approach. In 1976 it was 2.14, in 1977 2.25. This result is counter to the findings of some studies that PSI results in higher grades.

The student questionnaire analysis is reflected in Table 7. In 1977, students were given pre and post-questionnaires with corresponding items. The items of general

interest are reported here.

Three general trends are interesting. First, it should be noted that there was moderate attitude shift in a positive direction on all pre-to-post items. This shift seems to be movement from neutral to agree of strongly agree. Second, those students taking the course as an elective were generally more positive toward the course than were students who were required to take the course. The former were primarily speech communication majors, the latter journalism majors. Third, there is a positive correlation between grade received and satisfaction with the course. Students receiving A's and B's generally responded more favorably on all items than did those receiving C's and D's.

Six individual Likert-type questionnaire items are reported. The first is stated as follows: "I feel that this course will be of value to me in my subsequent education or career." About half of the students agreed with this statement. The second item is, "I expect to enjoy (have enjoyed) this course." Only about 40% of the class agreed on the post-test, but this represents a heavy shift from about 6% on the pre-test. The third item: "I believe I will learn (have learned) a great deal from this class." On the post-test, about half agreed. Fourth, "I feel that my background is (has been) sufficient for me to successfully complete this course." About two-thirds agreed with this statement.

The last two items are especially revealing. Only about 36% of the students agree that "The self-paced approach, as I experienced it in this course, is superior to traditional methods in facilitating learning," and only about 25% agreed that this approach "is superior . . . for generating student interest."

We draw five major conclusions on the basis of these results. We outline these below with some possible explanations. Our explanations are based primarily on our subjective impressions from teaching the course.

Conclusion 1: In our course most students have not made optimal progress in passing module exams.

There are a number of possible reasons for this. The tendency for students to procrastinate in PSI has been previously mentioned. We suspect students' initial negative attitude toward the course may have exacerbated this tendency. Also we acknowledge the difficulty of the material for many students, causing slower progress than might be expected. Finally, while we attempted to include as many interesting examples and illustrations as possible, the most involving activities were in the final activities, not the initial ones. Thus slow student progress may be attributable in part to design problems.

Conclusion 2: Most students in our course have found it difficult to understand and remember this material, even

in the self-paced format.

One of the primary reasons for this difficulty may be that this is the most technical course in the students' program. It is totally different from the bulk of course-work these students experience. Also, as reflected in the pass rate data, the modules are not optimally balanced in difficulty. We also perceive some motivational problems that may have contributed to some students' failure to learn. Many students were not motivated to prepare for module exams, and few students actually sought the tutorial help made available to them. These motivational problems were partly attitudinal, partly situational, and partly design-related. One manifestation of the negative attitude was a tendency for some students to manipulate the system by passing exams through trial-and-error. We found this behavior to be frustrating for students and for us. A primary situational factor was constraints on our time. We made eight person-hours per week available for the thirty students in the course. This time was essentially used up grading exams and counselling students in areas of weakness. A design fault may have been an inadequacy of self assessments to adequately prepare students for actual module exams.

Conclusion 3: In our course, the PSI approach produced a lower grade distribution than did the traditional lecture-discussion method.

There are perhaps two reasons for this. The first is that the PSI approach is competency based, and students must clearly demonstrate some rather difficult competencies to achieve higher grades. Also, ironically, we suspect that the clarity of grading criteria produces the perception of difficulty, causing students to aim for lower levels than they might under norm-referencing grading. This speculation, however, might only apply in certain restricted situations such as those encountered in this course.

Conclusion 4: Many of our students were not satisfied with the PSI approach, nor did they perceive that significant learning had taken place.

This problem may be explained in part by the initial negative attitude discussed earlier. In addition, while PSI may overcome some of the difficulties of the traditional classroom method, it creates new obstacles for the student to deal with. At Humboldt, this problem may be accentuated by the fact that very few courses are taught in a self-paced format, and the students have little or no experience with it. Finally, we note that a number of students have called this approach "impersonal." Actually, it is more personal in terms of individual faculty-student contact, but that contact tends to be negative in that it consists of grading exams and pointing out areas for improvement. It is likely that this teacher-student atmosphere creates a negative halo effect.

Conclusion 5: Some students (about a fourth to a third in our case) seem to learn well and be satisfied with this method. Of course, some of these students would probably do well under any method. We cannot tell what proportion of the achievers were uniquely helped by this particular method. This would be a good research question for further study.

PSI as an instructional method has many advantages. However, we do not believe it necessarily provides an ideal solution for dealing with courses with inherent problems. Specifically, we note the importance of the nature of the material, the program status of students, and initial student attitudes. We have also learned that this method must be carefully designed to consider the many subtle factors affecting the teaching situation. In the immediate future, we will be revising our course again. We hope to incorporate the best features of PSI and lecture-discussion methods in teaching Empirical Research Methods.

TABLE 1

Cumulative Pass Rate

1976*

Module	Completion Rate by Week								
	3	4	5	6	7	8	9	10	11
1	30	31	31	31	31	31	31	31	31
2	20	24	28	28	30	31	31	31	31
3	8	18	20	23	27	31	31	31	31
4	4	6	12	14	15	26	28	30	30
5		3	3	6	13	16	20	27	30
6		3	3	4	8	14	16	22	30
7		1	2	3	4	5	9	14	25
8					2	2	2	4	14
9					1	1	2	2	6

*Data not available for first two weeks.

TABLE 2

Cumulative Pass Rate

1977

Module	Completion Rate by Week									
	1	2	3	4	5	6	7	8	9	10
1	25	32	33	33	34	34	34	34	34	34
2	4	11	19	30	32	32	33	33	33	33
3		6	13	21	28	29	30	32	33	33
4		1	6	10	20	22	29	32	33	33
5			3	5	6	11	17	19	24	31
6			2	3	5	8	13	17	22	32
7				2	2	4	6	9	16	25
8							2	2	6	10
9									2	5

TABLE 3

Module Pass Rate -- 1976

Module	Exams Attempted	Exams Passed	Pass Rate
1	43	32	74%
2	62	31	50%
3	37	31	84%
4	49	30	61%
5	72	30	42%
6	43	30	70%
7	48	25	52%
total	354	209	59%

TABLE 4

Module Pass Rate -- 1977

Module	Exams Attempted	Exams Passed	Pass Rate
1	50	34	68%
2	78	33	42%
3	50	32	64%
4	57	33	58%
5	92	31	34%
6	49	32	65%
7	62	25	40%
total	438	220	50%

TABLE 5

Final Grade Distribution (PSI)

Year	A	B	C	D	F	NC	Total
1976	6	8	11	5	3	2	35
1977	5	5	15	7	1	0	32

TABLE 6

Final Grade Distribution (Traditional)

Year	A	B	C	D	F	Total
1972*	6	4	3			13
1974	8	9	8	2	1	28
1975	7	8	4	2		21

*Not yet required in Journalism program.

TABLE 7

FREQUENCY DISTRIBUTION

STUDENT QUESTIONNAIRE RESULTS

	TOTALS		ANALYSIS OF POST TEST					
			Student Status		Grade in Course			
	Pre	Post	** Required	* Elective	D/F	C	B	A
Item: I feel that this course will be of value to me in my subsequent education or career.								
Strongly Agree	3	6	2	4		1	1	4
Agree	6	8	7	1	1	4	2	1
Neutral/ Undecided	13	5	5		1	3		1
Disagree	8	5	4		3	1		
Strongly Disagree	2	4	4		1	3		
Item: I expect to enjoy (have enjoyed) this course.								
Strongly Agree		4	2	2			1	3
Agree	2	7	4	3	1	4		2
Neutral/ Undecided	13	4	4		1	2	1	
Disagree	9	7	7		2	4		1
Strongly Disagree	8	6	6		2	3	1	

*Primarily SpeechCommunication majors.

**Primarily Journalism majors.

FREQUENCY DISTRIBUTION
STUDENT QUESTIONNAIRE RESULTS (CONT.)

Item: I believe I will learn (have learned) a great deal from this class.

	TOTALS		ANALYSIS OF POST TEST					
	Pre	Post	Student Status		Grade in Course			
			Required	Elective	D/F	C	B	A
Strongly Agree	2	4	1	3		1	1	2
Agree	5	11	9	2	1	6	1	3
Neutral/ Undecided	19	5	5		3		1	1
Disagree	3	6	6		1	5		
Strongly Disagree	3	2	2		1	1		

Item: I feel that my background is (has been) sufficient for me to successfully complete this course.

Strongly Agree	4	8	5	3	1	2	1	4
Agree	12	11	9	2	2	6	2	1
Neutral/ Undecided	12	3	3		1	2		
Disagree	3	5	5		1	3		1
Strongly Disagree	1	2	1		1			

STUDENT QUESTIONNAIRE RESULTS (CONT.)

*Item: The self-paced approach, as I experienced it in this course, is superior to traditional methods in facilitating learning.

	TOTAL	STUDENT STATUS		GRADE IN COURSE			
		Required	Elective	B/F	C	B	A
Strongly Agree	5	2	3		1	1	3
Agree	5	4	1	2	2		1
Neutral/ Undecided	4	3	1		2		2
Disagree	9	8		2	5	2	
Strongly Disagree	5	5		2	3		

*Item: The self-paced approach, as I experienced it in this course, is superior to traditional methods for generating student interest.

Strongly Agree	1		1			1	
Agree	6	4	2		2		4
Neutral/ Undecided	6	5	1	2	3		1
Disagree	9	9		1	5	2	1
Strongly Disagree	6	6		3	3		

*Post test only.

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